A perfect moment during imperfect times: Arctic energy research in a low-carbon era

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Abstract

In the last decade, Arctic energy research has been dominated by a focus on oil and gas exploration, development, and extraction. This introductory article to an *Energy Research & Social Science* special issue, entitled "Arctic Energy: Views from the Social Sciences," challenges this approach and offers a broader and more inclusive perspective on Arctic energy research. In reflecting this perspective, some of the articles investigate social, economic, political, and environmental aspects of oil and gas development in the region while offering critiques of such development's processes and initiatives, both of which are usually seen in a positive light. Other articles target non-fossil sources and types of energy, thereby providing a view of the Arctic as a living laboratory for energy services. The special issue's broad and inclusive perspective is also represented by the diverse disciplinary, professional, and ethnic backgrounds of the contributing authors, as well as the range of conceptual and methodological approaches.

1. Why the Arctic, Why Now?

In the autumn of 2015, after Royal Dutch Shell suspended its Arctic campaign, a colleague of mine asked if I thought if the apparent withdrawal of the oil and gas industry from the region would result in a decline in Arctic research.[i][1][2][3] I struggled to give a definitive answer despite being in the midst of editing this special issue. Thus, I decided to pass this question to the colleagues in the field.

The best opportunity to find answers came this January during Arctic Frontiers, a marquee Arctic conference held annually in Tromso, Norway. Unlike, for example in 2014, when the spot price of Brent crude was hovering around 108 dollars per barrel leaving little doubt about the ever increasing need for energy-related research in the Arctic, in 2016, the collective mood was rather different.[4] Many researches, especially those in the nascent stages of their careers were indeed concerned about the demand and resources available for their investigatory endeavors. Some, particularly those from the conference's host country, attributed their concerns to the below 30 dollar per barrel price of oil and, therefore, gloom prospects for a rapid rebound of exploration and development activities.

However, I discovered a sense of renewed purpose and research agenda. The recent oil plunge reminded the public of the devastating boom-and-bust patterns associated with resource acquisition-

[i] For instance, Royal Dutch Shell suspended its Arctic offshore campaign in the United States indefinitely in September 2015 following the postponements of offshore Arctic operations by Statoil and Rosneft in 2015.[1] [2] [3]

based economic models. Hundreds of thousands have been laid off worldwide in the already low-labor-intensive oil and gas sector.[5] The oil price drop also sent budgets of hydrocarbon-producing states into disarray and their citizens into a state of near panic. For example, 37% of Russians listed slumping oil prices as the main reason behind their economic woes.[ii6] These issues and concerns have expanded the value of Arctic energy research from largely instrumental for the already occurring activities to critical for the decisions about *prospective* activities in the region.

The idea for this special issue was conceived and developed prior to the oil price collapse and during the major shift in the geopolitical disposition in the region due to the annexation of Crimea by Russia. With most new Arctic oil and gas projects currently on the shelf, and with the conflict in Eastern Ukraine in a trench war state, the region might have lost its magazine cover luster. However, as I elaborate further below, the Arctic has not lost and will never lose its importance for the people who live inside, as well as outside its borders. Nor will it ever lose its value as an empirical depository and functioning laboratory for many researchers, ranging from climate scientists to anthropologists.

A U.S. energy scholar and professor once offered me what she though was a solid piece of advice - always explain how my research applies beyond Arctic borders, because "most people think that nobody lives there." Unfortunately, this view is rather common, even among those familiar with the world's demographic geographies. Yet depending on how the region's boundaries are drawn,[iii7] anywhere from 4 million to 10 million people call the Arctic home.[8] Some of these people, particularly the indigenous 10 percent of its current population, have resided in the Arctic for many centuries, surviving extreme climate, remoteness, and extended darkness. These communities have accumulated a tremendous amount of knowledge, including how to procure, store, and use energy in the most efficient manner, despite the circumstances and available resources.

Figure 1 Map Showing the Three Definitions of the Arctic

Source: National Snow & Ice Data Center[7]

The rest of the world's inhabitants are more connected to the Arctic than most of them realize. The Arctic is warming at double the rate of the rest of the world.[9] The warming has caused significant changes in the region's natural landscape, as described in the U.S. National Oceanic and Atmospheric Administration's (NOAA) annual Arctic Report Card:

> Maximum sea ice extent on 25 February was 15 days earlier than average and the lowest value on record (1979-present). Minimum ice extent in September was the 4th lowest on record. Sea ice continues to be younger and thinner: in February and March 2015 there was twice as much first-year ice as there was 30 years ago. Changes in sea

[ii] This answer was second only to the rapid devaluation of the national currency, which 51% of Russians tied to the drop in oil price.[6]

[iii] The three most common definitions of the Arctic boundary include: 66° 34' North (also known as the Arctic Circle), the tree line, and the 10 degree (Celsius) isotherm.

> ice alone are having profound effects on the marine ecosystem (fishes, walruses, primary production) and sea surface temperatures.[10]

These changes are largely due to the demand for fossil fuels occurring *outside* the region that is fulfilled, in part, by the supply from it. This positive feedback loop has become a vicious cycle, as many parts of the region impacted by climate change continue to rely on fossil fuels to generate revenue to combat the effects of climate change. Even worse, some politicians are using the effects of climate change to justify the urgent expansion of oil and gas exploration and development. For example, Governor Bill Walker of Alaska said the following in an interview with BBC:

> "We have villages that are washing away because of the change in the climate. I don't see anyone putting together contribution funds to move Kivalina, and that's our obligation, we stand by that. We need to figure out how to do that. Those are very expensive. We have about twelve villages in the same situation." [11]

When asked by the correspondent if paying for the effects of climate change should be the reason to continue exploring and extracting oil in Alaska, the governor replied: "Absolutely. In a responsible way as we have in the past."[11]

What sounds like a no-brainer to Governor Walker sounds to others like a monumental mistake. It might not be a wise idea for the world to go cold turkey on fossil fuels, because the likely social, economic, and political upheaval that will follow. However, as 195 countries agreed in Paris in December 2015, the age when fossil fuels are seen as the main answer to any demand for energy services is over.[12]

The Arctic is often referred to as the "energy frontier."[13][14] If we are to examine this designation from the standpoint of energy services, it is certainly incorrect. As noted above, people of the High North have been using predominately renewable sources to traverse frozen landscapes and heat and light their humble dwellings for over a millennium.[15] Even if we are to make energy synonymous with fossil fuel production, as Table 1 depicts, the Arctic appears to be more of an energy backyard than a frontier. After all, coal production began in Svalbard at the end of the 19th century[16] and supergiant Russian Samotlor and American Prudhoe Bay oilfields were discovered, respectively, in 1965 and 1968.[17] However, if we are to narrow the definition of the Artic to its continental shelf, and the definition of frontier to oil and gas production, the region indeed displays all the characteristics of a "triple" frontier. Arctic offshore is one of the most remote and fastest-changing regions, with one of the harshest climates, in which to explore, develop, and extract hydrocarbons.

Table 1 Discovered Arctic Oil and Gas Fields with Recoverable Resources Exceeding 500 million boe

Source: Budzik 2009[17]

In my view, it is only a matter of time before the world drains its legacy oil fields and storage. Barring a technological miracle capable of significantly slashing the price of new expensive oil, the next upswing in oil prices may extend well beyond the 100 dollar per barrel mark. This is the kind of incentive that can turn even the triple energy frontier into a coveted area despite the villages being swallowed by the sea and the commitments made under the first universal climate agreement. Judging by the interest in the 23rd licensing round held by the Norwegian Petroleum Directorate, as of December 2015, 26

energy companies have begun gearing up for the next oil price climb by expressing interest in exploration of 57 licensing blocks, 54 of which are located in the Barents Sea.[18]

Clearly, there is no better time to investigate, explore, and otherwise scrutinize the Arctic's energy past, present, and future. It is also an opportune time for government and business decision-makers to take advantage of the pause created by the oil price plunge and utilize this research with the objective of recognizing and learning from past mistakes and successes.

2. What Are We Doing Here?

The title of this section is the same as that of the very first article published by this journal, and I borrowed it for two reasons: first, to directly address the question that is no doubt on many readers' minds, and second, to emphasize the continuity of our research agenda as set forth by the editor in chief in that very same first article.[19] This is certainly neither the first nor the last energy journal issue or collective volume devoted to the Arctic. What makes this issue distinct is that it addresses what Sovacool identifies as two main shortcomings of the energy studies scholarship – less than equal gender balance and the dominance of "hard" or "objective" disciplines such as economics and statistics over other social sciences.[19] Remarkably, without making it an objective, we have achieved a near equal female–male author balance in this issue, with women dominating as lead and sole authors. Likewise, the vast majority of scholars who responded to the call for papers and submitted high quality and relevant articles represent methodologically human-centered disciplines, such as anthropology, human geography, law, and history.

Contributors to this issue also come from a wide range of educational, ethnic, national, cultural, and professional backgrounds. I am particularly proud of the fact that the call for papers reached researchers whose professional experience extends beyond academia. Some of these researchers succeeded in fusing practical experience gained in the business and non-profit sectors with expertise obtained as members of academic research units. For example, Wilson's and Ozawa's hands-on-experience working with the oil and gas sector companies provided a great contextual grounding for their respective articles. Others, such as Smits and Loe, utilized their consultancy expertise when collaborating with their colleagues in academia. The result of such inter-sectoral expertise and collaboration is scholarship that not only contributes to its respective field but also creates an accessible platform for policy-making.

One of the goals for this issue was to have a mix of scholars with a diverse level of research experience. I am happy report that we were able to achieve this goal. The issue includes articles authored and co-authored by a wide range of researchers – from those who only recently entered academia to those whose works have been enriching academic knowledge for many years. The latter group includes, to name a few, Rasmussen, Dean and Doris Carson, Sköld, and Stammler.[iv] I am particularly excited to welcome to the special issue Natalya Novikova who is, in my view, the leading legal anthropologist working on indigenous issues in the context of mineral resource development in the Russian Arctic. Unfortunately, due to language constraints, Novikova's scholarship, which is based on decades of

[iv] This is not to say that other established researchers who contributed to the special issue should not be included in this group or the non-academic public and private sector experience of other researchers should be deemed as inferior to their more established (in academia) cohorts.

fieldwork in the Russian High North, is not as well known in the English-language academic literature, as it should be.

Academic institutions from all Arctic states are represented in the issue.[v] As illustrated in Table 2, the articles cover all but one of the Arctic states (Finland), as well as certain Arctic regions, i.e. North American Arctic and the Arctic as a whole. Among the countries and autonomies featured in the issue are two that rarely get exposure in the Arctic literature, Iceland and the Faroe Islands. We organized the issue based on the geographic scale of the articles – from local to national to a particular region within the Arctic and to the Arctic as a whole.

Table 2 Special Issue at Glance

A careful reader familiar with the subject matter might have noticed that I managed to complete a substantial portion of this introductory article without referencing perhaps the most cited study since 2008, entitled "Circum-Arctic Resource Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle."[20] Published by the U.S. Geological Survey (USGS), this four-page summary provided a quick and easy reference for academics, policy-makers, corporate executives, politicians, and journalists studying, contemplating, and arguing for energy development in the Arctic. The USGS study authors were careful to note the following critical disclaimer:

> [Q]uantitative assessments were conducted in those geologic areas considered to have at least a 10-percent chance of one or more significant oil or gas accumulations. For the purposes of the study, a significant accumulation contains recoverable volumes of at least 50 million barrels of oil and/or oil equivalent natural gas. The study included only those resources believed to be recoverable using existing technology, but with the important assumptions for offshore areas that the resources would be recoverable even in the presence of permanent sea ice and oceanic water depth. No economic considerations are included in these initial estimates; results are presented without reference to costs of exploration and development, which will be important in many of the assessed areas.[20]

The study sparked interest in the Arctic for many, and inspired some to study it. However, the frequent references to the USGS study, combined with a near-universal disregard for and omission of the aforementioned disclaimer, have narrowed the Arctic energy discourse to a discussion of the region's foremost importance as a resource base.

When organizing this special issue, a principal goal was to avoid this rather one-sided view. Instead, we wanted to present the topic of Arctic energy from the broadest perspective possible, including the aforementioned multi- and interdisciplinarity, the circumpolar scale, and several energy sources, types, and uses. This is neither the first nor last Arctic-themed issue or collective volume featuring scholars from different disciplines who specialize in different areas of the region. For example, *Arctic Oil and Gas: Sustainability at Risk?*, edited by Mikkelsen and Langhelle, has become a fixture on bookshelves of many Arctic researchers.[21] However, what sets this issue apart is its *inclusive* perspective that

[v] As well as academic and non-academic institutions from non-Arctic countries, United Kingdom and the Netherlands, for example.

ultimately leads to the foundational question – what is energy for – that every energy researcher should have in the back on his or her mind.

The application and scholarly contribution of articles comprising this issue extend beyond the Arctic region. As noted in Table 2, concepts and themes upon which the articles are premised are not Arctic specific. Thus, we hope that the issue will contribute to the literature on energy security, risk governance, trust, corporate social responsibility, energy justice, traditional knowledge, sustainability, resource curse, social license to operate, resource cycle, bilateral governance, path dependence, and energy geopolitics. We also hope that methodological approaches utilized by the issue's authors will enrich methodological toolboxes of researchers focusing on different parts of the globe, especially those working in the world's other frontiers.

2.1 Arctic is always local, Arctic is always global

The issue opens with a short communication entitled "Vodka on Ice? Unveiling Russian Media Perceptions of the Arctic," in which Gritsenko affirms the paramount role of energy resource acquisition in the Arctic policy and public discourses. She does so by analyzing prevalent Arctic-related subjects covered in the Russian national and local media before (2011-2013) and after (2014-2015) the annexation of Crimea and the conflict in Eastern Ukraine. Gritsenko relies on a combination of topic modeling and "manual" coding of Russian-language media sources.[22]

The issue continues with an article entitled "Lessons from the Arctic Past: the Resource Cycle, Hydro Energy Development, and the Human Geography of Jokkmokk, Sweden."[23] As the title suggests, Dean Carson and Doris Carson, Nordin, and Sköld zero in on the history of hydropower development in a remote municipality located in the heart of Swedish Sapmi. They map the impact of the hydropower development to the "resource cycle" with various demographic data categories and arrive at a comprehensive human geography of the municipality since the late 19th century. The authors utilize a combination of quantitative and qualitative data, including media articles and demographic statistics.

Loe and Kelman's article, "Arctic Petroleum's Community Impacts: Local perceptions from Hammerfest, Norway," takes the reader to the home base of the Goliat project.[24] Goliat is the second "proper" offshore Arctic oil project and it is developed from the first ever floating, production, storage, and off-loading unit (FPSO) designed and built specifically for Arctic conditions.[vi][25][26] The primary aim of the study is to investigate local perceptions of Eni Norge, the project's principal developer, and its corporate social responsibility (CSR) efforts. The authors investigate these efforts and draw conclusions by conducting 20 interviews.

Nazarova examines the concepts of risk governance in the context of a Russian oil company's business activities in the Arctic. Her article entitled "Between Everything and Nothing: Organizing Risks and Oil Production in the Russian Arctic" provides a sharp critique of the uneven approach to handling risk that is prevalent in the Russian oil and gas industry.[27] Nazarova premises her finding on interviews conducted with the company's employees representing a wide range of occupations from health, safety, and environmental (HSE) specialists to senior manages responsible for the company's oil transportation activities.

Nilsen, who similarly to Loe and Kelman uses Goliat as a case study, addresses two other Norwegian hydrocarbon projects, Snohvit and Skarv.[28] His article entitled "Why Arctic Policies Matter: The Role of

[vi] Prirazlomnoe development is considered the first oil project located on the Arctic continental shelf.[26]

Exogenous Actions in Oil and Gas Industry Development in the Norwegian High North" focuses on the role of local content policies in the economic development of a peripheral region. Nilsen's study is premised on extensive semi-structured interviews with executives from Statoil, Eni Norge, and British Petroleum (the owners and operators of the aforementioned projects), as well as government officials from the Ministry of Petroleum and the Nordland and Finnmark municipalities that host the projects.

2.2 From regional impacts to national implications

Sidortsov, Ivanova, and Stammler focus on another marquee energy project, the 4000-kilometer-long pipeline "Power of Siberia" that is projected to take natural gas from the Kovyktinskoe and Chyandinskoe sub-Arctic fields to Northern China.[29] Their article, entitled "Localizing Governance of Systemic Risks: a Case Study of the Power of Siberia Pipeline in Russia" examines two divergent approaches to systemic risks associated with energy mega-projects, one mandated under Russian law and another observed by the authors as part of their fieldwork in the Sakha Republic. The article, which is a byproduct of two larger studies, is based on analysis of legal texts and transcripts of official meetings, as well as fieldwork observations and semi-structured interviews.

In "Negotiating Uncertainty: Corporate Responsibility and Greenland's Energy Future," Wilson explores CSR limits in Greenland that from 2013 to 2015 experienced an *en masse* withdrawal of oil and gas companies.[30] Wilson's skillfully utilizes her training as an anthropologist to gather data from several geographic locations. She deploys a rich arsenal of engagement techniques such as formal and informal interviews, participation in a public consultation, and ad hoc conversations with students, shopkeepers, waiters, and other local residents. Although Wilson conducts her study in the context of mineral resource development in Greenland, her findings ring true for many Arctic regions experiencing the downward trend of the boom-and-bust economic cycle.

Andreassen's article "Arctic Energy Development – How Can 'Sustainability' Fit?" emphasizes the importance of accounting for national circumstances in examining foundational concepts related to energy development.[31] She investigates the meaning of sustainable development in the context of industrial development in the Russian Arctic. The author's analysis is premised on the Russian government's official Arctic policies and the Russian mass media's coverage of such.

A leap eastward over the Bering Strait takes us to rural Alaska, the locale of "Defining Energy Security in the Rural North – Historical and Contemporary Perspectives from Alaska." Hossain, Loring, and Marsik argue that principal considerations comprising the definition of energy security must diverge based on geographic scale. The paper is a hybrid of an original research article and a review essay. It sends a strong message against energy orientalism and sets an intriguing agenda for prospective research.[32]

2.3 Comparative Arctic

Novikova's article takes the reader back to both Russia and the legal realm. She phrases the paper's title in the form of a provocative question – "Who Is Responsible for the Russian Arctic?" – and places her query in the context of interaction between the energy industry and indigenous peoples of the Russian "Extreme North."[33] Novikova builds her analysis on material gathered during fieldwork in several regions of the Russian Arctic and sub-Arctic, as well as in the Canadian North-Western Territories. She combines it with an analysis of the relevant laws and regulations, adoption of some of

which she witnessed first-hand as a member of various advisory boards and non-government organizations involved in the legislative and administrative rulemaking process.

Novikova's article has a comparative component, drawing parallels between the Russian and Canadian Arctic policies, whereas Ozawa's article devoted to Norwegian-Russian relations in the energy sector is comparative in its entirety.[34] As part of a larger study, Ozawa examines these relationships through the notion of trust. The author analyzes data derived from semi-structured interviews and policy statements made by government and industry leaders, as well as assessments given in the academic literature and mass media.

Similarly to Ozawa, Smits, Justinussen, and Bertelsen also use trust as one of the cornerstones of their article.[35] Their focus, however, is on institutional trust, which along with legitimacy constitutes the two core principles behind the Social License to Operate (SLO) concept. The authors assert that human capital development is critical to obtaining and maintaining an SLO. Smits, Justinussen, and Bertelsen build their case by analyzing interview, observation, and relevant documents data obtained during three case studies in Greenland, Iceland, and the Faroe Islands.

2.4 Issues that span the entire Arctic region

Corine Wood-Donnelly reminds the reader that the rush for Arctic energy riches is not a recent phenomenon.[36] She explores the history of whaling in the North American Arctic and draws intriguing comparisons with the most recent quest for Arctic oil and gas. She develops four historic lessons that corporate and government decision-makers would be wise to consider before committing significant resources to another Arctic energy quest.

McCauley, Heffron, Pavlenko, Rehner, and Holmes focus on the Arctic's future as they employ the emerging concept of energy justice to examine implications of potential energy infrastructure buildup in the region.[37] The authors extend the concept of justice to non-human life, stressing the impacts of energy development on fragile Arctic flora and fauna. Their approach is intriguing to say the least – the authors maintain a problem-centered or problem-first perspective rather than a stakeholder-centered one.

The issue concludes with an article entitled "Icy Waters, Hot Tempers, and High Stakes: Geopolitics in the Arctic."[38] As the title suggests, the article covers perhaps the most-discussed topic in the public Arctic discourse – energy geopolitics. Brutschin and Schubert assert that isolated geopolitical snapshots paint a distorted picture of nuanced historic processes. The authors further assert that analyzing spatial data over time leads to a better understanding of casual connections, which in turn leads to better forecasting.

3. Conclusion

I was not optimistic about my chances of distilling an overarching conclusion from such a diverse collection of articles written by an even more diverse group of scholars. However, I did identify one and, even more surprisingly, it was hiding in plain sight. What all the authors appear to agree on is that the Arctic has meant and will mean much more for the world's energy past, present, and future than a place where the world's undiscovered 13% of oil and 20% of natural gas might be.[20]

It is also remarkable *how* the participating authors reached this overarching conclusion. Some scrutinized the industry's beloved notion of corporate social responsibility and found its real limits in ensuring that the Arctic region remains home to millions of people after the industry leaves. Others examined the past and found an extensive record of energy efficiency and conservation solutions that are indigenous to the Arctic. The historic analysis of some authors revealed future trends that are troubling for the Arctic. Other authors challenged the popular mass media perception of the Arctic as a confrontation zone, and showed that how the region can serve as a model of cooperation on the local, regional, national, and international levels.

I hope that this special issue demonstrates the value of research that treats the Arctic region as more than merely a source of energy supply. Thus, it is important for many future investigations to keep energy services as a starting point. The Arctic brings a vast history of renewable heating, cooking, mobility, and, since the late 19th century, electricity. It is full of living resources, such as fisheries, that might prove more important to the world in the long term than fossil fuels. I hope that this special issue makes a compelling case for this approach to Arctic energy research in the low-carbon era.

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